speed along the track of the eclipse, thus artificially lengthening the eclipse's duration. Studies will be made of the far outer corona in total radiation and in selected spectral bands, plus measurements of radiation polarization. Such data is needed to check and develop the theory that the outer corona and zodiacal light are phenomena of the same nature. Attempts will also be made to check the hypothesis of the existence of a super-corona. Radio observations should shed new light on the nature of the chromosphere, especially as regards the theory of its two-component structure (a system of hotter spicules disseminated in interspicular space). In addition to infrared and polarization studies of the corona, attempts will be made to determine the moments of contact between the lunar and solar discs and to define the boundaries of the total phase, data essential to accurate forecasting of future eclipses. Contributions will also be made by countless amateur observers throughout the USSR. There is 1 map.

ASSOCIATION: Vsesoyuznyy institut nauchnoy i tekhnicheskoy informatsii AN SSSR (All-Union Institute of Scientific and Technical Information, AS USSR), Moscow

KULAGIN, S.G.; KOVBASYUK, L.D.; DAGAYEV, M.M.; LAZAREVSKIY, V.S.; DEMIDOVICH, Ye.G.; BRONSHTEN, V.A.; YAKHONTOVA, N.S.(Leningrad); KUROCHKIN, N.Ye.; DOKUCHAYEVA, O.D.; SHCHERBINA-SAMOYLOVA, I.S.; MASEVICH, A.G.; LIPSKIY, Yu.N.; MARTYNOV, D.Ya.; ARSENT'YEV, V.V.; MOROZ, V.I.; MASEVICH, A.G.; PEREL', Yu.G.; BAKULIN, P.I., otv. red.; KULIKOV, G.S., red.; AKHLAMOV, S.N., tekhn. red.

[Astronomical calendar; yearbook.Variable part, 1962] Astronomicheskii kalendar'; ezhegodnik. Peremennaia chast', 1962. Red. kollegiia: P.I.Bakulin i dr. Moskva, Gos.izd-vo fiziko-matem. lit-ry, 1961. 259 p. (Vsesoiuznoe astronomo-geodezicheskoe obshchestvo, no.65) (MIRA 14:12)

1. Gosudarstvennoye astronomo-geodezicheskoye obshchestvo (for Kalugin, Kovbasyuk, Lazarevskiy, Demidovich). 2. Moskovskoye otdeleniye Vsesoyuznogo astronomo-geodezicheskogo obshchestva (for Dagayev, Bronshten, Kurochkin).
(Astronomy—Yearbooks)

SHCHERBINA-SAMOYLOVA, I.S., kand.fiz.-matem.nauk (Moskva)

The first true radio star. Priroda 50 no.9:113 S '61.
(MIRA 14:8)

(Radio astronomy)

SHCHERBININ, A., mayor, chlen sudeyskoy komissii.

More training in the radio station work. Voen. sviaz. 16 no.1:21-22 Ja '58. (MIRA 11:2)
(Radio operators--Study and teaching)

SHCHERBININ, A. A.

Tsimlyansk - Reinforced Concrete Construction

Mechanized prefabrication of large sectional reinforcements. Mekh. trud. rab. 6 No. 7, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED.

SHCHERBININ, A. A.

USSR/Miscellaneous - Industrial processes

Card : 1/1 Pub. 71 - 16/17

Authors : Fishberg, V. M. Engineer and Shcherbinin, A. A., Engineer, hero of labor

Title : Bath methods for welding armature constructions adopted at the Kuybyshev hydroelectric construction

Periodical : Mekh. trud. rab. 4, 43 - 47, June 1954

Abstract : A new bath method for welding of armature constructions, first used at the construction of the Kuybyshev hydroelectric station, is described. Illustrations; drawings.

Institution : ...

Submitted : ...

BYKOV,N.D.; FISHBERG,V.M.; DMITRIYEV,I.S.; SOKOLOV,Ye.V.; SHCHERBININ,A.A.

Electric arc weldingof concrete reinforcements by the dip method in factories and on construction sites. Rats.i izobr.predl. v stroi. no.100:6-10 '54. (MLRA 8:10)

(Electric welding)

SHCHERBININ, Aleksandr Alekseyevich, udarnik kommunisticheskogo truda, sverlovshchik; CHMIL', L.N., red.; LIMANOVA, M.I., tekhn. red.

[Operating a drilling machine] U sverlil'nogo stanka. Khar'kov, Khar'kovskoe knizhnoe izd-vo, 1962. 12 p. (MIRA 16:9)

1. Khar'kovskiy turbinnyy zavod im. S.M.Kirova (for Shcherbinin). (Kharkov--Machinery industry) (Efficiency, Industrial)

ACC NR: AT7003616 (N) SOURCE CODE: UR/3090/66/000/015/0005/0022

AUTHOR: Neyman, V. G.; Filyushkin, B. N.; Shcherbinin, A. D.

ORG: none

TITLE: Structure and circulation of the water masses in the Eastern Indian Ocean during the summer monsoon

SOURCE: AN SSSR. Mezhduvedomstvennyy geofizicheskiy komitet. X razdel programmy MGG: Okeanologiya. Sbornik statey, no. 15, 1966. Okeanologicheskiye issledovaniya, 5-22

TOPIC TAGS: hydrographic survey, ocean current, ~~[illegible]~~ oceanographic expedition, ~~oceanographic ship~~ OCEAN DYNAMICS / EASTERN INDIAN OCEAN

ABSTRACT: In this article hydrographic observations made on board the r/v Vityaz' from July through October 1962 are analyzed. The main part of the hydrological survey took place along sections at 77°, 84°, and 91°30'E longitude, the Bay of Bengal, and from the eastern tip of Java to Australia. Temperature and salinity distribution diagrams of the eastern part of the Indian Ocean are given. It is shown that the pattern of currents is connected with monsoon and trade winds and determines the main features of the distribution of hydrological elements. Based on dynamic computations, the water circulation in the baroclinic layer of the ocean corresponds to a two-layer

Card 1/2 UDC: none

SABININ, K.D.; SHCHERBININ, A.D.

Estimating the accuracy of the work of bathythermograph and electrobathythermosonde and their possible use in studying the surface layer of the sea. Trudy Inst.okean. 40:184-188 '60.
(MIRA 14:8)

(Ocean temperature)

MARIAMPOL'SKIY, N.A.; SHCHERBININ, A.I.

New power unit for driving slush pumps. Neftianik 2 no.10:25-26 O '57. (MIRA 10:12)

1. Nachal'nik proizvodstvenno-tekhnicheskogo otdela tresta Kavkazneftegazrazvedka (for Mariampol'skiy). 2. Glavnyy mekhanik tresta Kavkazneftegazrazvedka (for Shcherbinin).
(Oil well pumps)

SHCHERBININ, A.I.; SAZONENKO, P.A.

Winches used in refitting tackle units in oil wells. Bezop. truda v prom. 2 no.11:35-36 N '58. (MIRA 11:11)

1. Trest Kavkazneftegazrazvedka.
(Oil wells—Equipment and supplies)

SHCHERBININ, A.I.; GELLER, Z.I.

Automated lubricant tank of the V2 engine in drilling rigs.
Mash. i neft. obor. no.9:34-37 '64.
(MIRA 17:11)

1. Stavropol'skiy filial Groznenskogo neftyanogo nauchno-issledovatel'skogo instituta.

SHCHERBININ, A.M.

Mechanical sampling and dividing of coal and coke samples in by-product plants. Zav.lab. 22 no.10:1229-1234 '56. (MLRA 10:5)

1.Ukrainskiy uglekhimicheskiy institut.
(Coal) (Coke)

ZASHKVARA, V.G.; IVANOV, P.A.; SHCHERBININ, A.M.

Mechanized screening of coal samples. Koks i khim. no.10:17-18 '58.
(MIRA 11:11)

(Coke industry--Equipment and supplies)

SHCHERBININ, A M.

32-2-56/60

AUTHOR: None Given

TITLE: Short Communications (Korotkiye soobshcheniya)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol.24, Nr 2, pp.250-251 (USSR)

ABSTRACT: K. Ye. Perepelkin (Laboratory for Carbonic Disulfide of the All-Union Institute for Scientific Investigations of Artificial Fibers) proposed an aspirator for achieving slow pressure changes in equipment for the determination of surface tensions of highly viscous liquids, consisting of a flask with a content of 10 - 20 liters, into which water flows in or out slowly.
V. S. Ogiyenko (State University, Irkutsk) developed an electrode consisting of a glass and a calomel electrode. From a figure it can be seen, that the glass electrode, which is filled with 0,1n HCl is fastened in the center of a glass tube by means of paraffin and resin. The calomel electrode is mounted in a second glass tube, which is fitted with a ground section and which is put around the first one. Both tubes or electrodes, respectively, are situated in an aprou-

Card 1/2

Short Communications

vette-like vessel. This electrode design is considered to be practically useful for measurements of the pH of solutions.
A. I. Borisov (Magnitogorsk Branch, Industrial Constructions Institute) designed an areometer balance. From a figure it can be seen that in principle it consists of an areometer, the top of which carries a scale, which is supposed to receive the object to be weighed. By means of a suitable liquid and of the graduation of the areometer it is possible to observe, e.g. the drying process of a sample, because the areometer rises to the loss of weight of the sample and computations can be conducted on the basis of the graduation.
A. M. Shcherbinin (Ukrainian Institute for Carbon Chemistry) proposes a new method for the sampling of gas-sulfur. Four holes are drilled into every 25th sulfur plate (from 15-20 mm in a diameter and with a depth of from 125-130mm) with an electric drill from the plant "Gluvelektroinstrument", Khar'kov. The powder obtained by drilling, which amounts to about 4 kg from a lorry with 18 tons, is then reduced to 1 kg by a four-fold division. There are 2 figures.

AVAILABLE: Library of Congress

Card 2/2 1. Scientific reports-USSR

SHCHERBININ, A.N., inzh.; SAZONENKO, P.A., inzh.

Improving the safety catch for drum coils. Bezop. truda v prom. 2 no.8:40 Ag '58. (MIRA 12:7)
(Oil fields--Equipment and supplies)

SHCHERBININ, B. V.

26360 Organizatsiya skorostnogo kapital'nogo remonta kotla. Zlektr. Stantsii, 1949, No. 8, s. 5-8.

SO: LETOPIS' NO. 35, 1949

SHCHERBINA, B. V.

"Combatting Ground Water in Underground Gas Passages," Elek. Stan., No. 12, 1949. Engr.

[illegible]

YERMAKOV, V.S.; KLOCHKOV, I.M.; CHIZHOV, D.G.; KOGTEV, G.I.; LAVRENENKO, K.D.; NEKRASOV, A.M.; SPIRIN, S.A.; VESELOV, N.D.; KOTILEVSKIY, D.G.; SMIRNOV, G.V.; MARINOV, A.M.; MAKSIMOV, A.A.; IVANOV, M.I.; NEMOV, A.P.; CHUPRAKOV, N.M.; AVTONOMOV, B.V.; SYROMYATNIKOV, I.A.; MOLCHANOV, S.I.; FAERMAN, S.TS.; GORSHKOV, A.S.; GOL'DENBERG, P.S.; SOKOLOV, B.M.; MAKUSHKIN, Ya.G.; MKHITARYAN, S.G.; RASSADNIKOV, Ye.I.; GRUDINSKIY, P.G.; FOMICHEV, G.I.; SHCHERBININ, B.V.; AAYTSEV, V.I.; KOKOREV, S.V.; KLYUSHIN, M.F.; PESCHANSKIY, V.I.; SAFRAZBEKYAN, G.S.; i dr...

IUrii Prokhorovich Komissarov; obituary. Elek.sta. 25 no.5:60 My '54.
(Komissarov, IUrii Prokhorovich, 1910-1954) (MLRA 7:6)

L 11262-66 EWT(1)/EWP(m)/T-2 IJP(c)

ACC NR: AP5024895 UR/0382/65/000/003/0021/0029

AUTHOR: Tsinober, A.B.; Shcherbinin, E.V. 12 B

ORG.: None

TITLE: Flat magnetohydrodynamic jets

SOURCE: Magnitnaya gidrodinamika, no.3, 1965, 21-29

TOPIC TAGS: magnetohydrodynamic theory, flat magnetohydrodynamic jet

ABSTRACT: General solutions are obtained for three magnetohydrodynamic problems involving two-dimensional (x,y) jets of conductive fluids in a transverse (along z-axis) magnetic field, which can be an arbitrary, not necessarily polynomial function of the downstream coordinate x. In all cases it is assumed that the induced magnetic field can be neglected, i.e. $Re_m \ll 1$. Considering now the first case, that of an immersed infinite jet of conductive fluid, the additional assumption of zero currents outside the mixing zone leads to a system of equations (1) and (2), with the initial condition (3) and an additional initial condition developed by integrating (1) across the jet section:

$$u\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}=\nu\frac{\partial^2 u}{\partial y^2}-\frac{\sigma B^2}{\rho}u \quad (1) \qquad \frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}=0 \quad (2)$$

$$v=\frac{\partial u}{\partial y}=0 \text{ for } y=0,\ u\to 0 \text{ for } y\to\pm\infty$$

Card 1/2 UDC: 538.4

ACC NR: 5024895

The notations are conventional, with B=B(x) - magnetic field strength, σ -electrical conductivity, etc. The solution is obtained with the aid of the self-modeling approach introducing, e.g. the flow function ψ, in the form of $\psi = A.f(\eta).x/\delta$; $\eta = B.y/\delta$ with A and B - temporary constants, $\delta = \delta(x)$ - jet width, to be determined by further considerations. The expression obtained for $\delta(x)$, (11), in conjunction with that *) found for I_0 appearing in the denominator of $\delta(x)$, shows that for a given certain magnitude of field strength, there exists a point on the jet axis where the jet is washed out "sidewise" completely. The solution also shows the feasibility of controlling the jet shape (jet width) by prescribing a suitable magnetic field variation along the x - axis. For example, to obtain jet widening according to $\delta = kx^m$, it is necessary to impose a magnetic field: $B = B_0/x^m$, with the limiting condition of $m \geqslant 2/3$. The case of $m = 2/3$ corresponds to $B = 0$, and $I_0 = \text{const.}$, i.e. to a common hydrodynamic jet. Analogous considerations are applied in the case of a turbulent infinite conductive jet in a transverse magnetic field, and finally in the case of a radial-slit type laminar jet. The latter can have in the general case all three velocity components (twisted jets). This problem is formulated in cylindrical coordinates. Certain limitations of solutions found are discussed. Orig. art. has: 22 formulas.

$$\delta = \frac{Dx^{2/3}}{\sqrt{1 - DN(4.5\nu\rho^2/I_0^2)^{1/3}x^{4/3}}}. \qquad (11)$$

$$\rho A^2 B \lim_{x \to 0} \frac{x^2}{\delta^3} = I_0 \qquad *)$$

SUB CODE: 20 SUBM DATE: 02Feb65 ORIG REF: 001 OTHER REF: 001

Card 2/2

L 14236-66 EWT(1)/EWP(m)/EWA(d)/ETC(m)-6/EWA(1) WW

ACC NR: AP5024896 UR/0382/65/000/003/0030/0036

AUTHOR: Shcherbinin, E.V. 17

ORG: None B

TITLE: Integral relationship methods in the theory of electroconductive fluid jets

SOURCE: Magnitnaya gidrodinamika, no.3, 1965, 30-36

TOPIC TAGS: magnetohydrodynamic theory, magnetohydrodynamic jet

ABSTRACT: The mixing of a laminar jet of electroconductive fluid is considered. The jet is assumed spreading along a flat hard plane in a magnetic field transverse to the plane. The slit source is at the coordinate origin. Under the assumption of zero electrical currents in the mixing zone and absence of pressure gradient everywhere in the field of flow, the equations of motion and their initial conditions will have the form:

$$u\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}=\nu\frac{\partial^2 u}{\partial y^2}-Nu \quad (1) \qquad \frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}=0 \quad (2) \qquad u=v=0 \text{ for } y=0,\ u\to 0 \text{ for } y\to\infty \quad (3)$$

Here, u and v - are the jet-axial and transverse components of fluid velocity, $N=\sigma B^2/\rho$, σ - conductivity, B - magnetic field induction, ρ - density of environment and γ kinematic viscosity. The problem is solved by the method of integral relationships. Two integral relationships for the determination of two independent flow para-

Card 1/2 UDC 538.4

L 11236-66

ACC NR: AP5024896

meters are necessary. They are also sufficient, because other parameters are determinable by the two chosen ones. The first integral relationship is obtained by the integration of (1) on "y", between the limits of 0 and ∞; the second, by effecting the same operation subsequent to a multiplication of both parts of (1) by $\int_0^y u\,dy$. By following this line of thought, with suitable substitutions, effective choice of function structure, and the use of a precise solution known for the case of a complete absence of a magnetic field, the author arrives at closed solutions for the main characteristics of the magnetohydrodynamic jet flow. An analogous approach yields similar results in the second studied case, that of a flat infinite jet issuing from a slit source in a homogeneous magnetic field orthogonal to the jet axis. Singular points and quantitative as well as qualitative flow features are discussed in both cases. Orig. art. has 1 fig., 22 formulas.

SUB CODE: 20 SUBM DATE: 11Jan/ ORIG REF: 001

Card 2/2

SHVANGIRADZE, R.R.; OGANEZOV, K.A.; MOZGOVAYA, T.A.; SHCHETININA, E.V.

Method for stabilizing an arc discharge during the spectrum analysis of powdered materials. Zhur. prikl. spektr. 3 no.5: 397-402 N '65. (MIRA 18:11)

44482
S/197/62/000/011/002/003
B184/B102

26.2431
10.2000

AUTHORS: Tsinober, A., Shcherbinin, E.

TITLE: The influence of a transverse magnetic field on the resistance of bodies flown around by an electrically conducting liquid

PERIODICAL: Akademiya nauk Latviyskoy SSR. Izvestiya, no. 11 (184), 1962, 45-54

TEXT: The behavior of nonconducting cylinders placed in a mercury flow is investigated experimentally. The cylinders had the diameters d = 0.3, 1.2, 2.05, and 5 mm. The value obtained for the resistance coefficient $C_f = f/\frac{1}{2}\rho v^2 ld$ was found to be $C_f = C_o\left[1 + f(\overline{l})\frac{M}{\sqrt{Re}}\right]$, where f is the force exerted by the flow on the cylinder, $Re = \frac{\rho vd}{\eta}$ is the Reynolds number ($100 < Re < 6000$) ρ is the density of mercury, v is the velocity of the undisturbed flow, η is the dynamic viscosity of mercury, $M = Bb\sqrt{\frac{\sigma}{\eta}}$ is the Hartmann number ($0 < M < 40$), where B is the magnetic

Card 1/2

TSIMMER, A. ; Masters, A.I. [illegible]

Effect of a transverse magnetic field on plate resistance. Izv.AN Latv.SSR no.6:43-48 '53. (MLRA 17:4)

1. Institut fiziki AN Latviyskoy SSR.

TSINOBER, A. [Cinobers, A.]; SHCHERBININ, E.

Jet flows of electrically conductive liquids. Izv.AN Latv.SSR no.7:57-66 '63. (MIRA 17:4)

1. Institut fiziki AN LatvSSR.

TSINOBER, A.; SHCHERBININ, E.

Effect of a magnetic field on the hydrodynamic trail behind a body. Izv. AN Latv. SSR no.10:61-66 '63. (MIRA 17:1)

1. Institut fiziki AN Latviyskoy SSR.

ACCESSION NR: AP4013749 S/0197/63/000/012/0049/0056

AUTHORS: Tsinober, A.; Shtern, A.; Shcherbinin, E.

TITLE: On the separation of magnetohydrodynamic boundary layer

SOURCE: AN LatSSR. Izv., no. 12, 1963, 49-56

TOPIC TAGS: bismuth cylinder, transverse magnetic field, laminar boundary layer, Hartmann number, Stuart number

ABSTRACT: By means of tin and bismuth cylinders, coated with mercury, the effect of transverse magnetic field on the position of separation of the laminar boundary layer from the cylinder surface has been measured. The mercury channel width was 30 mm, and cylinder diameters ranged from 5 to 8.5 mm. The angles at which separation took place were measured for various Reynolds and Hartmann numbers. Data were correlated, using the Stuart number M^2/Re. The effect of cylinder conductivity on separation distance was also studied. For tin, φ/φ_0 (separation angle ratio) was 1.75 at $M^2/Re \sim 1$ and for bismuth, at $M^2/Re \sim 1.7$. The unsteady magnetohydrodynamic equations in two dimensions were solved iteratively

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ACCESSION NR: AP4013749

for $Re_m \ll 1$, assuming no electric fields present and the separation criteria were obtained as

$$\left(\frac{M^2}{Re}\right)_{sep} \sim \frac{\rho V_0^2}{L}\frac{L^2}{\eta V_0}\frac{1}{Re} = 1,$$

in good agreement with experiments. Orig. art. has: 23 formulas, 3 figures, and 1 table.

ASSOCIATION: Institut fiziki AN Latv. SSR (Institute of Physics AN Latv. SSR)

SUBMITTED: 08Aug63 DATE ACQ: 14Feb64 ENCL: 00

SUB CODE: PH NO REF SOV: 005 OTHER: 001

Card 2/2

KALIS,KH.E.;LIELAUSIS,O.A.;TSINOBER,A.B.;SHTERN,A.G.;SHCHERBININ,E.V. (Riga)

"Conductive fluid flow past bodies in a transverse magnetic field"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

BRANOVER, G.G.; DUKURE, R.K.; KIRKO, I.M.; LIELAUSIS, O.A.; SHCHERBININ, E.V. (Riga)

"On hydraulic laws of turbulent flows of liquid metals in magnetic fields"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

TSINOBER, A.B., [illegible], E.V.

[illegible] dimensional magnetohydrodynamic jets. Mag. gidr. no.3:21-29 '65. (MIRA 18:10)

L 41404-65
EWA(m)-2/EWP(m)/EPF(n)-2/EPR/EPA(s)-2/EWG(v)/EPA(w)-2/EWT(l)/EWT(m)/EPA(bb)-2/T-2/EWP(b)/EPA(sp)-2/EWP(t) Pd-1/Pe-5/Pi-4/Ps-4/Pt-10/Pu-4/Pab-10 IJP(c) WW/
ACCESSION NR: AR5009688 JD/JG UR/0058/65/000/002/G002/G002

SOURCE: Ref. zh. Fizika, Abs. 2G10

86
B

AUTHORS: Tsinober, A. B.; Shtern, A. G.; Shcherbinin, E. V.

TITLE: Flow of a conducting liquid around a body in a magnetic field

CITED SOURCE: Izv. AN LatvSSR. Ser. Fiz. i tekhn. n., no. 4, 1964, 31-40

TOPIC TAGS: magnetohydrodynamics, mhd flow, pressure dependence, magnetic field dependence, flow resistance

TRANSLATION: Experiments are described devoted to the study of the influence of a magnetic field on the resistance when mercury flows around a conducting body. It is established that, in the presence of good electric contact between the mercury and the body, the resistance of the body increases with increase of its electric conductivity. The influence of the magnetic field on the distribution of the pressure on a round cylinder was investigated. It is shown that when a magnetic field is applied the pressure in the forntal part of the cylinder in-

Card 1/2

L 41404-65

ACCESSION NR: AR5009688

creases, so that the pressure coefficient in the forward critical point becomes larger than unity. In the rear part of the cylinder the pressure decreases. The increase in the resistance due to the change in the pressure amounts to 40--50% of the increase in the total resistance.

SUB CODE: ME ENCL: 00

Card 2/2

SHCHERBININ, E.V.

Integral methods in the theory of jets of a conducting fluid.
Mag. gidr. no.3:30-36 '65. (MIRA 18:10)

L 47370-65 EWG(j)/EWT(l)/EWP(m)/EWT(m)/EWP(i)/EPF(c)/EWP(e)/EPR/FCS(k)/EWP(b)/EWA(l)/EWA(d) Pd-l/Pr-4/Ps-4 WW/GS/WH

ACCESSION NR: AT5009761 UR/0000/64/004/000/0129/0132

44
B+1

AUTHOR: Tsinober, A. B.; Shtern, A. G.; Shcherbinin, E. V.

TITLE: Flow in the trail of a cylinder within a transverse magnetic field

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike, 3d, Riga, 1962. Voprosy magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady soveshchaniya, v. 4. Riga, Izd-vo AN LatSSR, 1964, 129-132

TOPIC TAGS: Karman trail, magnetohydrodynamic flow, transverse magnetic field, hydrodynamics, mercury flow

ABSTRACT: According to hydrodynamic theories, at Re numbers exceeding a certain value (~45 for a circular cylinder), the flow within the track of an object moving through a fluid medium becomes stationary and one observes a Karman trail. The present authors studied the above effects experimentally by photographing the surface of free mercury during its flow around a circular cylinder 1 cm in diameter and made of organic glass. The flow was made observable by a thin layer of soft graphite powder covered by a thin solution of nitric acid. The meniscus was removed by means of a copper annulus mounted on the upper base of the cylin-

Card 1/2

L 47379-65

ACCESSION NR: AT5009761

der and submerged into the solution so that the upper edge of the ring was at the same level as the mercury. Experiments were carried out within the ring-shaped magnetohydrodynamic channel described earlier (G. G. Branover, I. M. Kirko, O. A. Liyelausis, Prikladnaya magnitogidrodinamika, Trudy Instituta fiziki AN Latv. SSR, 12, 1961, 167). The article presents the photographs taken and discusses the pattern transformations as a function of the Reynolds and Stuart numbers and the magnetic field intensity. Orig. art. has: 2 figures.

ASSOCIATION: None

SUBMITTED: 11Aug64 ENCL: 00 SUB CODE: ME, EM

NO REF SOV: 007 OTHER: 001

Card 2/2

L 57473-65 EWT(l)/EWP(m)/EWA(d)/FCS(k)/EWA(l) Pd-l

ACCESSION NR: AP5014171 UR/0382/65/000/001/0018/0028 32 B
538.4:532.526

AUTHOR: Kalis, Kh. E.; Tsinober, A. B.; Shtern, A. G.; Shcherbinin, E. V.

TITLE: Flow of electrically conducting fluid in a transverse magnetic field around a circular cylinder

SOURCE: Magnitnaya gidrodinamika, no. 1, 1965, 18-28

TOPIC TAGS: magnetohydrodynamics, plasma flow, Navier-Stokes equation, Reynolds number

ABSTRACT: The Navier-Stokes equations for the flow of a viscous conducting fluid past an insulated cylinder are solved for the case of a transverse magnetic field with the Reynolds number of 40; the results are compared with an experiment (of higher Reynolds number). The exact problem is written out as a set of difference equations and solved for several values of the magnetic coupling parameter *N*. The results are represented by a plot of streamlines and qualitatively compared with photographs from the experiment. Also velocity distribution, pressure and other results for various Stuart numbers are plotted and discussed. The method of solution

Card 1/2

L 57473-65

ACCESSION NR: AP5014171

avoids oscillation of the stream function as in the work of M. Kawaguti (*Journ. Phys. Soc. Japan*, 1953, 8, 6). Orig. art. has: 11 formulas, 8 figures.

ASSOCIATION: none

SUBMITTED: 15Sep64 ENCL: 00 SUB CODE: ME, EM

NO REF SOV: 005 OTHER: 003

Card 2/2

L 57474-65 EWT(1)/EWP(m)/EPA(s)-2/EWI(m)/EWA(d)/EWP(t)/FCS(k)/EWP(b)/EWA(1) Pd-1/
ACCESSION NR: AP5014173 Pt-7 IJP(c) UR/0382/65/000/001/0033/0036
JD/JG 538.4:532.542.4

47
B

AUTHOR: Branover, G. G.; Slyusarev, N. M.; Shcherbinin, E. V.

TITLE: Results of turbulent velocity fluctuation measurements in mercury stream in presence of transverse magnetic field

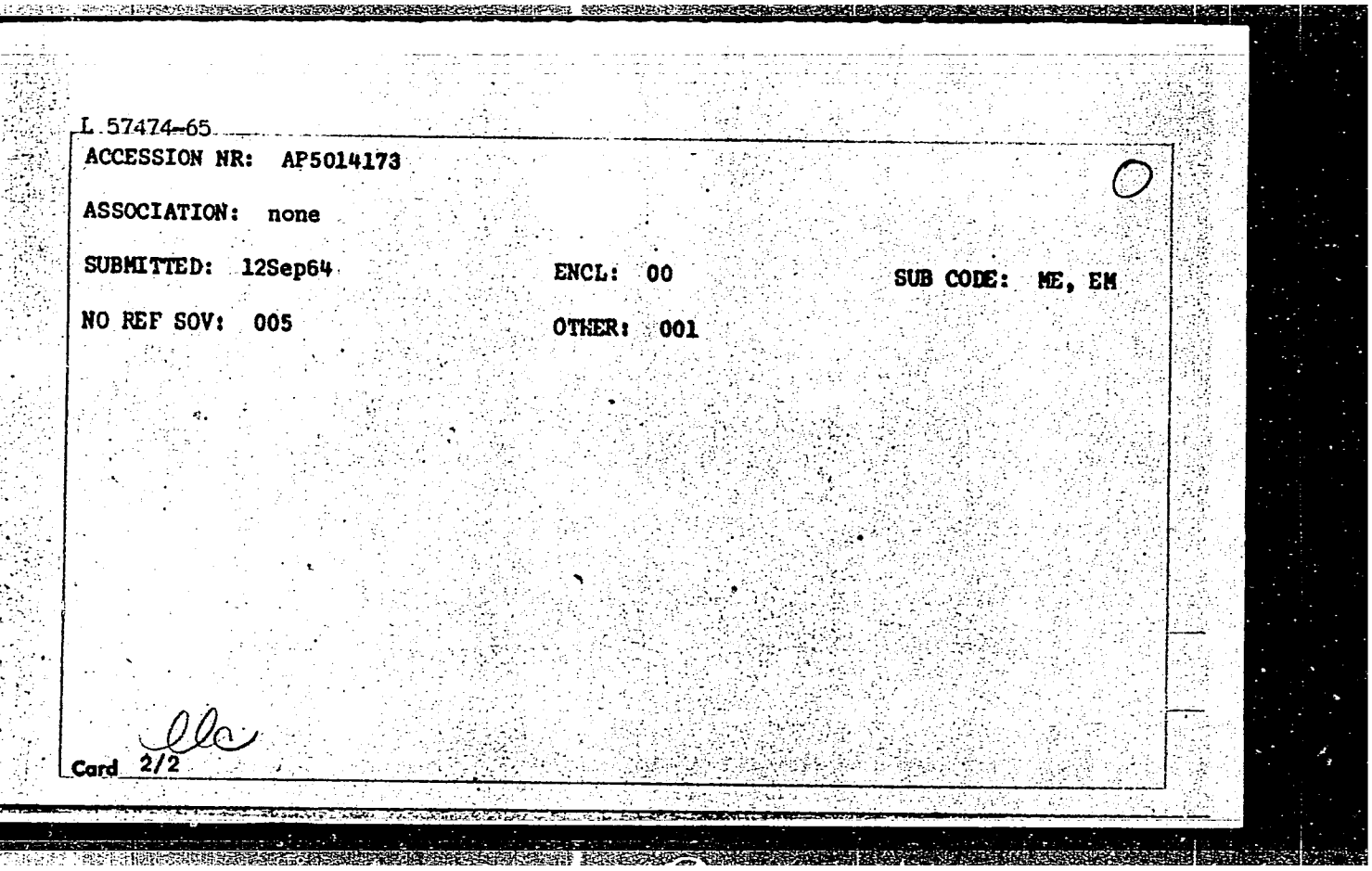
27

SOURCE: Magnitnaya gidrodinamika, no. 1, 1965, 33-36

TOPIC TAGS: magnetohydrodynamics, turbulent flow, Reynolds number

ABSTRACT: The purpose of the study was to determine experimentally the predicted suppression of turbulence in mercury flow when a magnetic field is applied across the stream and to confirm effect of the field on the flow velocity profile. The experiments were performed with Reynolds number ranging from 0 to 3,800 and Hartman's number ranging from 0 to 140. Turbulence and flow profile data were obtained using a specially constructed probe sensitive to dynamic pressures. Turbulence suppression was indicated by decrease in amplitude of velocity fluctuations as the magnetic field increased. Insufficient data precluded determination of dependence of the frequency fluctuations on magnetic field. Orig. art. has: 4 figures.

Card 1/2



L 57474-65

ACCESSION NR: AP5014173

ASSOCIATION: none

SUBMITTED: 12Sep64 ENCL: 00 SUB CODE: ME, EM

NO REF SOV: 005 OTHER: 001

Card 2/2

L 32854-65 EWT(1) IJP(c)

ACCESSION NR: AP5005770 S/0170/65/008/001/0114/0115

AUTHORS: Branover, G. G.; Tsinober, A. B.; Shcherbinin, E. V. 28 B

TITLE: Transformation of turbulent flow structure of mercury in a transverse magnetic field behind sudden expansion

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 8, no. 1, 1965, 114-115

TOPIC TAGS: turbulent flow, magnetic field, mercury, velocity profile, Reynolds number, Hartman number

ABSTRACT: The hydromagnetic flow of mercury expanding from a 0.2 x 10-cm slit into a 2 x 10-cm channel (120 cm long) was studied experimentally. A transverse magnetic field was applied along the channel length, and velocity profiles were measured with Pitot tubes. The flow was turbulent with $Re = 3.35 \times 10^3$. The magnetic field was found to flatten the velocity profiles noticeably (see Fig. 1 of the Enclosure) and to reduce the size of the vortex zone in the vicinity of the expansion. Orig. art. has: 2 figures. [04]

ASSOCIATION: none

SUBMITTED: 22 Feb64 ENCL: 01 SUB CODE: ME

NO REF SOV: 004 OTHER: 002 ATD PRESS: 3205

Card 1/2

L 32854-65

ACCESSION NR: AP5005770 ENCLOSURE: 01

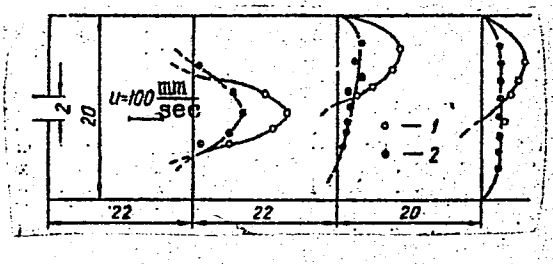


Fig. 1. Expansion of a jet with and without a magnetic field

Hartman number: 1 - M = 0; 2 - M = 88.2.

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L 41777-65 EWT(1)/EWP(m)/EWA(d)/EPR/FCS(k)/EWA(1) Pd-1/Pi-4 WW
ACCESSION NR: AP5005771 S/0170/65/008/001/0121/0123

32
31
B

AUTHOR: Tsinober, A. B.; Shtern, A. G.; Shcherbinin, E. V.

TITLE: Effect of the Reynolds number on the position of the point of detachment of the boundary layer

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 8, no. 1, 1965, 121-123

TOPIC TAGS: laminar flow, boundary layer, boundary layer detachment, Reynolds number

ABSTRACT: It is shown first that the concept of the boundary layer implies in itself a large Reynolds number, and that so far there have been no published data on systematic measurements in the range of smaller Reynolds numbers ($3 \times 10^2 - 10^4$) although such information would be of interest in connection with problems of measuring techniques, ore enrichment, and heterogeneous-physicochemical processes. The authors have therefore measured the point of detachment of a laminar boundary layer on the surface of a cylinder in the Reynolds number interval from 4.6×10^2 to 6×10^3. The experiments were made with tin and lead cylinders, of diameters

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L 41777-65
ACCESSION NR: AP5005771

from 0.2 to 0.5 cm, immersed to a depth of 5.5 cm in a rotating annular channel of average diameter 50 cm, and of 3 x 6 cm rectangular cross section. The rotation of the channel was regulated so that the speed of the mercury varied from 2.7 to 18.7 cm/sec. The cylinders were coated with amalgam prior to immersion, and dissolution of the amalgam in the liquid displayed the boundary between the laminar and vortical dissolution regions, corresponding to the detachment of the laminary boundary layer. Typical results are shown in Fig. 1 of the Enclosure. The possible experimental errors and the causes of disparity with results by others are briefly discussed. Orig. art. has: 1 figure.

ASSOCIATION: Institut fiziki AN Latviyskoy SSR, Riga (Institute of Physics, AN Latvian SSR)

SUBMITTED: 220ct63 ENCL: 01 SUB CODE: ME

NR REF SOV: 001 OTHER: 005

Card 2/3

L 15650-66 EWT(l)/EWP(m)/EWA(d)/ETC(m)-6 WW
ACC NR: AP6003222 SOURCE CODE: UR/0382/65/000/004/0154/0154

AUTHOR: Branover, G. G.; Shcherbinin, E. V.

ORG: none

TITLE: The behavior of a stream in a channel with nonconducting walls in a transverse magnetic field

SOURCE: Magnitnaya gidrodinamika, no. 4, 1965, 154

TOPIC TAGS: plasma flow, plasma magnetic field, plasma injection

ABSTRACT: Plane streams of mercury passed into a rectangular channel with insulated walls were found to exhibit unusual behavior with the imposition of a transverse magnetic field. The initial plane stream ceases almost entirely after a very short distance and the entire flow is concentrated in two narrow layers which cling to the walls of the channel and are parallel to the magnetic field. This flow structure is maintained over a considerable distance. A more thorough analysis of this phenomenon will be published in a future issue of *Magnitnaya gidrodinamika.*

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 000

Card 1/1 UDC: 538.4

ACC NR: AP6024848 (N) SOURCE CODE: UR/0371/66/000/002/0010/0015

AUTHOR: Tsinober, A. B. -- Cinobers, A.; Shchorbinin, E. V. -- Scerbinins, E.

ORG: Institute of Physics, AN LatSSR (Institut fiziki AN LatSSR)

TITLE: Some problems of the magnetohydrodynamic boundary layer

SOURCE: AN LatSSR. Izvestiya. Seriya fizicheskikh i tekhnicheskikh nauk, no.2, 1966, 10-15

TOPIC TAGS: magnetohydrodynamics, boundary layer theory, MHD, MHD boundary layer theory, MHD magnetic field linearization

ABSTRACT: For some flows of a conducting fluid in a longitudinal magnetic field it becomes expedient to effect a linearization of the MHD equations on the magnetic field, conserving for the velocity field all the assumptions of conventional hydrodynamics. On this basis, axially-symmetric and plane jet flows of a conducting fluid in a longitudinal and/or coplanar field, as well as non-stationary flows around bodies in a magnetic field orthogonal to the surface are considered. Attention is also directed to a partial analogy of the method to the non-inductive approximation approach (in the sense of ordinary boundary layer theory; Abstractor), often used in problems with a transverse magnetic field.

SUB CODE: 20/ SUBM DATE: 20Apr65/ ORIG REF: 002/ OTH REF: 001

Card 1/1

ACC NR: AP7005439 SOURCE CODE: UR/0382/66/000/002/0153/0155

AUTHOR: Shtern, A. G.; Shcherbinin, E. V.

ORG: none

TITLE: Development of a magnetohydrodynamic boundary layer on an accelerating body

SOURCE: Magnitnaya gidrodinamika, no. 2, 1966, 153-155

TOPIC TAGS: homogeneous magnetic field, magnetohydrodynamics, boundary layer problem

ABSTRACT: The development of a boundary layer is examined in a homogeneous, time-independent, magnetic field which has a component orthogonal to the surface of the body that is a function of the x component. The conditions under which boundary layer detachment can and cannot occur are established. Orig. art. has: 5 formulas. [JPRS: 38,764]

SUB CODE: 20 / SUBM DATE: 29Jan66 / ORIG REF: 003

Card 1/1 UDC: 538.4

ACC NR: AP6034580 SOURCE CODE: UR/0382/66/000/003/0055/0063

AUTHOR: Branover, G. G.; Shcherbinin, E. V.

ORG: none

TITLE: Magnetohydrodynamic jet flow in a bounded region

SOURCE: Magnitnaya gidrodinamika, no. 3, 1966, 55-63

TOPIC TAGS: MHD flow, Reynolds number, weak magnetic field, transverse magnetic field, turbulent flow

ABSTRACT: Initial experiments to study jet flows of magnetohydrodynamic fluids in bounded regions, with walls that do not follow free streamlines, are described and the results are given. The flow chamber and channels are shown in Fig. 1. Liquid mercury was used as the working fluid with induction pumps maintaining flow speed within 2%. The flow conditions were chosen so that the Reynolds number ranged from 5750 to 18,600 and the Hartmann number ranged from 0 to 296. A most detailed investigation was conducted for Reynolds number 5760 and the corresponding results are given in graphs showing velocity profiles at various positions in the flow. It is shown that in weak magnetic fields applied transverse to the flow, two unsymmetric vortices appear at the

UDC: 538.4

Card 1/2

ACC NR: AP6034580

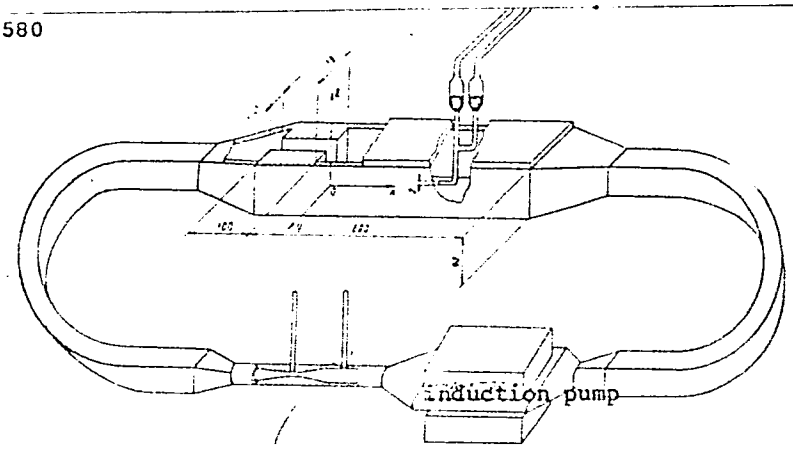

Fig. 1.

nozzle exit, then the stream interacts with the walls and some reverse flow appears gradually changing to typical turbulent flow in the channel. As the Hartmann number increases, complete stream symmetry appears. Some regions of instability were noted (shown in a three-dimensional plot) which were found to decay into characteristic flow under conditions of applied magnetic field, quite different from the normal flow. The results were parametrized and plotted for comparison with the scaling law derived for the flows studied in this work. Orig. art. has: 7 figures, 4 formulas.

SUB CODE: 20/ SUBM DATE: 07Dec65/ ORIG REF: 006/ OTH REF: 005

Card 2/2

ASTRAKHOV, V.I., dotsent, kandidat istoricheskikh nauk; MIKHAYLIK, A.F., dotsent; SHCHERBININ, I.F., redaktor; ZAMAKHOVSKIY, L.S., tekhnicheskiy redaktor

[Kharkov; a reference book] Khar'kov; spravochnaia kniga. [Khar'kov] Khar'kovskoe obl.izd-vo, 1957. 603 p. (MLRA 10:8)
(Kharkov--Directories)

SHEVCHENKO, N.F., red.; AMELIN, F.S., red.; GRECHKO, V.Ye., red.; ISAYEV, V.I., red.; KUZUBOV, V.I., red.; LIBERMAN, Ye.G., prof., doktor ekonom.nauk, red.; MAKARENKO, V.P., red.; SHCHERBININ, I.F., red.; YARMOLOVICH, O.M., red.; KARDASH, G.I., red.; DONSKOY, Ya.Ye., red.; LIMANOVA, M.I., tekhn.red.

[First and foremost; ways to further increase labor productivity in machinery manufacturing enterprises of Kharkov] Samoe vazhnoe, samoe glavnoe; o putiakh dal'neishego povysheniia proizvoditel'nosti truda na mashinostroitel'nykh predpriiatiiakh Khar'kova. Khar'kov, Khar'kovskoe knizhnoe izd-vo, 1960. 205 p. (MIRA 13:11)

1. Ukraine. Khar'kovskiy gorodskoy ekonomicheskiy administrativnyy rayon. Sovet narodnogo khozyaystva. 2. Nachal'nik tekhnicheskogo otdela Khar'kovskogo sovnarkhoza (for Kuzubov). 3. Khar'kovskiy inzhenerno-ekonomicheskiy institut (for Liberman).
(Kharkov--Machinery industry--Labor productivity)

SHCHERBININ, I. V.

20944 Shcherbinin, I. V. K voprosu o rinestro e loshadey v Odesskoy oblasti. Trudy Odes. s.-kh. in-ta, t. V, 1948, s. 145-51.--Bibliogr: 12 nazv.

SO: LETOPIS ZHURNAL STATEY - Vol. 23, Moskva, 1949

SHCHERBININ, I. V. and [illegible] V. I.

"Treatment of filariasis of horses with tar tar emetic."

SO: Veterinariia 25 (4), 1948, p. 14

SHCHERBININ, I.V.

Opistorchiasis in cats in Odessa. Med. paraz. i paraz. bol. no.4: 358 O-D '54. (MLRA 8:2)

1. Iz kafedry parazitologii Odesskogo sel'skokhozyaystvennogo instituta (dir. instituta prof. A.A.Verbin, zav. kafedroy dotsent I.V.Shcherbinin)
(OPISTORCHIS, infections, in cats)
(CATS, diseases opistorchiasis)

SHCHERBININ, I.V.; SHCHERBININA, G.S.

Unusual tick adherence to a human. Med.paraz. i paraz.bol. supplement to no.1:61 '57. (MIRA 11:1)

1. Iz kafedry parazitologii Odesskogo sel'skokhozyaystvennogo instituta i ginekologicheskogo otdeleniya Odesskogo obalstnogo onkologicheskogo dispansera.
(TICKS)

22(1)

AUTHOR: Shcherbinin, I.V., Docent

TITLE: The General Biological Training of Prospective Physicians Must be Improved

PERIODICAL: Vestnik vysshey shkoly, 1959, Nr 4, pp 6[illegible]-67 ([illegible])

ABSTRACT: In connection with the reorganization of the system of medical education it is necessary also to change instruction in general biology. At one of the scientific sessions, Professor S.P. Tokin of Leningrad University spoke on the danger of leading medicine away from biology. Pointing out that biology is the basis of medicine, the author states that the reorganization in teaching biology must tend towards the needs of the doctor's practical work. He points out the difficulties arising to the student when attending 2 parallel courses - one on general biology and the other on the fundamentals of zoology and parasitology. The author considers it appropriate to transfer lectures on general biology to the 2nd semester. The Smolensk Medical Institute has accordingly revised its entire program, and the author lists the sequence in

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The General Biological Training of Prospective Physicians Must Be Improved

which a number of medical subjects are being taught. The course begins with "The Fundamentals of Zoology and Parasitology". In the article, reference is made to Academicians K. I. Skryabin and Ye.N. Pavlovski.

ASSOCIATION: Smolenskiy meditsinskiy institut (Smolensk Medical Institute).

Card 2/2

SHCHERBININ, I.V.

A rare case of ascariasis in sheep. Zool.zhur. 38 no.12:1888 D '59. (MIRA 13:5)

1. Chair of Parasitology, Odessa Agricultural Institute.
(Ascarids and ascariasis) (Parasites--Sheep)

SOV/137-59-1-1668

Translation from: Referativnyy zhurnal Metallurgiya, 1959, Nr 1, p 221 (USSR)

AUTHORS: Dityatkovskiy, Ya. M., Kuleshov, M. Ya., Shcherbinin, K. P.

TITLE: Precision Die Stamping of Compressor Impeller Blades (Tochnaya shtampovka rabochikh lopatok kompressora)

PERIODICAL: V sb.: Novoye v kuznechno-shtampovochn. tsekhakh Leningrada. Leningrad, 1958, pp 89-107

ABSTRACT: The authors describe the technology of precision stamping of forgings (F) for compressor impeller blades made of steel Kh17N2; no machining allowances are made for the blade; the tolerance of the profile of the blade amounts to $^{+0.08}_{-0.12}$ mm per side; and the deformation to ±0.2 mm; the employment of this method results in a reduction of the over-all amount of labor required for the manufacture of the blades and increases the coefficient of utilization of the metal. Stamping is carried out in mechanical 1500-ton presses, the blanks for the blades being upset in a friction-driven press. The F's are calibrated three times. Results of mechanical testing of F's are presented together with general recommendations and data on the manufacture and heat treatment of the dies.

Ye. L.

Card 1/1

SHCHERBININ, N. I.

"Clinical Observations in Experimental Pneumonia." Cand Vet Sci, Leningrad Veterinary Inst, Min Higher Education USSR, Leningrad, 1954. (KL, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR HIGHER Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

USHAKOV, P.I., [illegible]; SHCHERBININ, N.I., kand.veterin.nauk

Novocaine block in diseases of the digestive tract in animals.
Veterinariia 36 no.6:46-48 Je '59. (MIRA 12:10)

1. Leningradskiy veterinarnyy institut.
(Novocaine) (Digestive organs--Diseases)

SHCHERBININ, N. I. and USHAKOV, I. I.

SHCHERBININ, N I

"Diagnostics of traumatic reticulitis and traumatic pericarditis."

Veterinariya, Vol. 37, No. 8, 1960, p. 60

Shcherbinin, Docent, Leningrad Agric. Inst.

USHAKOV, P.I., dotsent; SHCHERBININ, N.I., dotsent

Diagnosis of traumatic reticulitis and traumatic pericarditis.
Veterinariia 37 no.8:60-62 Ag '60. (MIRA 15:4)

1. Leningradskiy veterinarnyy institut (for Ushakov). 2. Leningradskiy sel'skokhozyaystvennyy institut (for Shcherbinin).
(Cows--Diseases and pests) (Pericarditis)
(Stomach--Inflammation)

SHCHERBINA, N.M.

Plowing

Deep plowing without turning over the topsoil is a method of preparing soil for tree culture. Les. khoz. 5. no. 9. 1952

Monthly List of Russian Accessions, Library of Congress, November 1952. Unclassified.

SHCHERBINA, N. N.

Plowing

Deep plowing as a means of increasing yield of agricultural crops. Sov. agron. 10 no. 8, 1952.

Monthly List of Russian Accessions, Library of Congress, September 1952 UNCLASSIFIED

[redacted], M. T.

[redacted], T. T., "Deep Plowing of Sierozem Soil Within Irrigating the Layer Over as a Method of Raising the Yield of Agricultural Crops in Kazakhstan." Min of Higher Education KAZSR, Kazakh State Agricultural Inst Alma-Ata, 1955. (Dissertations for Degree of Candidate of Agricultural Sciences)

So: Knizhnaya Letopis' No. 24, June 1955, Moscow

USSR/Soil Science - Cultivation. Melioration. Erosion. J-5

Abs Jour : Ref Zhur - Biol., No 9, 1958, 39045

Author : Shcherbinin, N.M.
Inst : -
Title : Without Moldboard Deep Cultivation in the Akmolinsk Oblast

Orig Pub : Zemledeliye, 1957, No 8, 33-36.

Abstract : Data from the Kazakh institute of grain economy and the industrial experiments of some kolkhozes of Akmolinsk Oblast pertaining to the application of deep plowing without moldboard with regard to grain crops is examined in this paper.
The application of plowing without moldboard to fallow cultivation is possible on soils of Akmolinsk Oblast.
It can also replace fall plowing.

Card 1/1 Pugun end Zernovogo Khozyaystva

ANOSHKIN, V.A.; GOLANT, V.Ye.; KONSTANTINOV, B.P.; POLOSKIN, B.P.; SHCHERBININ, O.N.

Microwave investigations of a plasma with the "Al'fa" installation. Zhur. tekhn. fiz. 30 no.12:1447-1455 D '60. (MIRA 14:1)

1. Fiziko-tekhnicheskiy institut AN SSSR i Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury.
(Plasma (Ionized gases))

SHCHERBININ, P.

Resolutions of the congress are being realized. Voen.znan. 38 no.12:22 D '62. (MIRA 15:12)

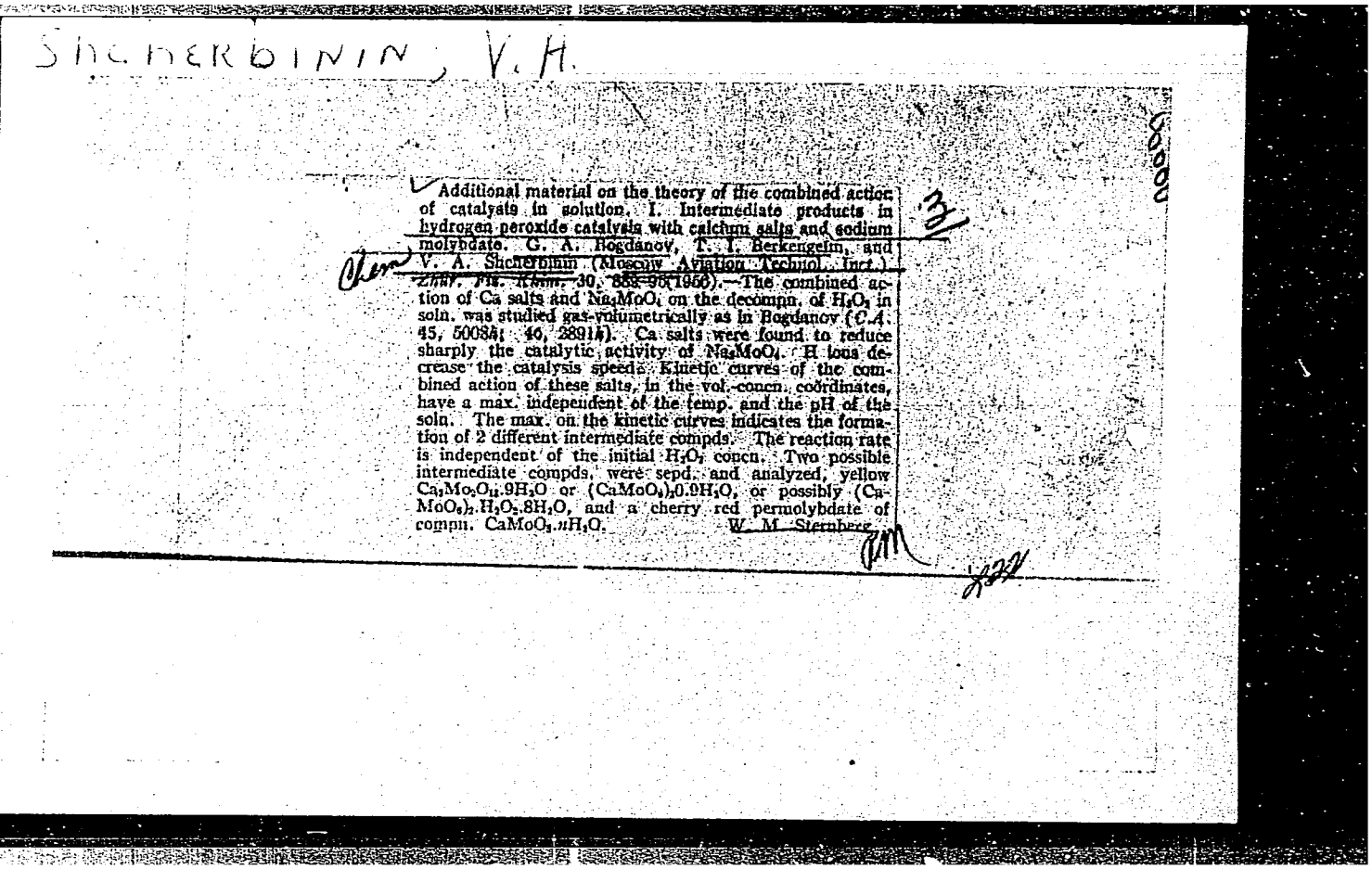
1. Predsedatel' komiteta pervichnoy organizatsii Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu Vyartsil'skogo metallurgicheskogo zavoda, Karel'skaya ASSR.
(Military education)

SHCHERBININ, P. I., Cand Tech Sci -- "Study of ferroceramic antifriction alloys in box assemblies of friction with facing materials." Tashkent, 1961. (Min of Higher and Sec Spec Ed UzSSR. Tashkent Polytech Inst) (KL, 8-61, 252)

SHCHERBININ, V.

Problem of the spacing between underground pipes. Stroi. truboprov. 8 no.6:35 Je '63. (MIRA 16:7)

(Pipelines—Standards)



SHCHERBININ, V. A.

Additional material on the theory of the combined action of catalysts in solution. I. Intermediate products in hydrogen peroxide catalysis with calcium salts and sodium molybdate. G. A. Bogdanov, T. I. Berkengeim, and V. A. Shcherbinin (Moscow Aviation Technol. Inst.) *Zhur. Fiz. Khim.*, 30, 883–90(1956).—The combined action of Ca salts and Na_2MoO_4 on the decompn. of H_2O_2 in soln. was studied gas-volumetrically as in Bogdanov (*C.A.* 45, 5003d; 46, 2891h). Ca salts were found to reduce sharply the catalytic activity of Na_2MoO_4. H ions decrease the catalysis speed. Kinetic curves of the combined action of these salts, in the vol.-concn. coördinates, have a max. independent of the temp. and the pH of the soln. The max. on the kinetic curves indicates the formation of 2 different intermediate compds. The reaction rate is independent of the initial H_2O_2 concn. Two possible intermediate compds. were sepd. and analyzed, yellow $Ca_3Mo_2O_{11}.9H_2O$ or $(CaMoO_4)_20.9H_2O$, or possibly $(CaMoO_4)_2.H_2O_2.8H_2O$, and a cherry red permolybdate of compn. $CaMoO_4.nH_2O$. W. M. Sternberg

AUTHOR: Scherbinin, V. ... Bogdanov, G. ... SOV/76-32-6-10/46

TITLE: Supplementary Data Concerning the Theory of the Joint Action of Catalysts in Solutions ("Dopolnitel'nyye materialy k teorii sovmestnogo deystviya katalizatorov v rastvore) II. The Kinetics of the Catalytic Effect of Hydrogen Peroxide by the Joint Action of Strontium and Molybdenum Salts (II. Kinetika kataliticheskogo razlozheniya perekisi vodoroda sovmestnym deystviyem soley stronteliya i molibdena)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 6, pp 1259-1261 (USSR)

ABSTRACT: The influence of sodium molybdate and of strontium chloride was investigated in a neutral, an acid and an alkaline medium with a simultaneous measurement of the electric conductivity of the solutions. Reference is made of the papers by Ye. A. Shilov et al. (Ref 2) and by I. A. Nikolayev (Ref 3). The kinetics of the process was investigated according to the amount of oxygen separating per unit time. On the strength of the evidence obtained it is believed that in this case of a true catalysis the theory of the formation of intermediates is valid. The shape of the kinetic curves leads to

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Supplementary Data Concerning the Theory of the Joint Action of Catalysts in Solutions. II. The Kinetics of the Catalytic Decomposition of Hydrogen Peroxide by the Joint Action of Strontium and Molybdenum Salts

the assumption that at least three intermediates are formed. They determine the complex variation of the velocity of the decomposition of hydrogen peroxide. The negative influence of the strontium ions on the velocity (caused by sodium molybdate) is due to the difference of the kinetic and thermodynamic properties of the intermediates. A study of the function of the velocity of catalysis versus the pH of the medium showed that the presence of hydrogen ions reduce the velocity of catalysis, and considerably change the character of the curve. This is not the case in an alkaline and neutral medium: the effect of the intermediates is explained in this connection. With a temperature increase the minima and maxima of the curve become more pronounced. It was observed that the temperature coefficient and the activation energy in an acid medium show higher values than in a neutral medium. In experiments serving for the investigation of the function of the velocity of catalysis versus the conditions of catalyst formation porous strontium chloride and sodium molybdate were

Supplementary Data Concerning the Theory of the Joint Action of Catalysts in Solutions. II. The Kinetics of the Catalytic Decomposition of Hydrogen Peroxide by the Joint Action of Strontium and Molybdenum Salts

used on the one hand, and on the other hand finished strontium molybdate was used. The investigations of electric conductivity showed that initially it decreases. Then it either rises, or (dependent upon the pH) remains constant. At the end of the process it drops again. This can serve as a substantiation of the assumption of the theory of intermediates in homogeneous catalysis. There are 7 figures, 1 table, and 4 references, which are Soviet.

ASSOCIATION: Moskovskiy energeticheskiy institut
(Moscow Institute of Power Engineering)

SUBMITTED: January 12, 1957

Card 3/3

AUTHORS: Shcherbinin, V. A., Bogdanov, G. A. SOV/76-32-7-4/45

TITLE: Further Data on the Theory of the Joint Action of Catalysts in Solution (Dopolnitel'nyye materialy k teorii sovmestnogo deystviya katalizatorov v rastvore). III. Strontium Permolybdates, Intermediate Products in the Catalytic Decomposition of H_2O_2 by Strontium and Molybdenum Salts (III. Permolibdaty stronttsiya-promezhutochnyye produkty kataliza razlozheniya H_2O_2 solyami stronttsiya i molibdena)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 7, pp.1466-1471 (USSR)

ABSTRACT: Three peroxide compounds were obtained by a direct synthesis from the components representing the reaction mixture in which the catalysis took place. The substances were of dark-claret-red, a brick-red and a yellow color. A fourth peroxide which was obtained by the decomposition of the yellow peroxide compound was also isolated. According to the results obtained from the analysis the first compound had the composition $SrMoO_8 \cdot 4H_2O$, the second the composition $SrMoO_7 \cdot nH_2O$ and the third the composition $SrMoO_6 \cdot 3H_2O$. The claret-red

Card 1/4

Further Data on the Theory of the Joint Action of Catalysts in Solution. III. Strontium Permolybdates, Intermediate Products in the Catalytic Decomposition of H_2O_2 by Strontium and Molybdenum Salts

compound represents regular crystals of a hexaparallelohedric form with a density of 3,052-3,062, which is rather stable at room temperature in the presence of humidity; on a rise of temperature, in the presence of humidity and in vacuum it converts into the yellow compound. The claret-red peroxide is not soluble in some organic solvents, however, it can well be solved in water. For producing the substance the yellow permolybdate is reacted with hydrogen peroxide, by dissolving it in a 30 % H_2O_2-solution under cooling conditions. The brick-red peroxide compound represents a fine powder which dissolves well in water; it is unstable and converts into the yellow compound. It can also be obtained from the yellow permolybdate, however, with a 20-22 % H_2O_2-solution. The yellow permolybdate also represents a powder with a density of 2,922-2,938, which is rather stable at room temperature but decomposes at higher temperature. It is not well soluble in water; the authors assume that a better soluble product $SrMoO_5$ is formed on this occasion,

Further Data on the Theory of the Joint Action of Catalysts in Solution. III. Strontium Permolybdates, Intermediate Products in the Catalytic Decomposition of H_2O_2 by Strontium and Molybdenum Salts

which then converts into the final decomposition product $SrMoO_4$. The compound is obtained from a cooled 30 % H_2O_2-solution with sodium molybdate and strontium chloride under intense stirring. The experiments carried out for the investigation of the degree of the hydrolysis of permolybdates showed that the hydrolysis with the brick-red compound was more thorough than with the two others. There are 5 tables.

ASSOCIATION: Moskovskiy energeticheskiy institut
(Moscow Institute of Power Engineering)

SUBMITTED: January 12, 1957

AUTHORS: Shcherbinin, V. A., Bogdanov, G. A. SOV/76-32-9-2/46

TITLE: Further Material on the Theory of the Joint Effect of Catalysts in Solution(Dopolnitel'nyye materialy k teorii sovmestnogo deystviya katalizatorov v rastvore) IV. The Kinetics of Conversion of Strontium Permolybdates (IV.Kinetika prevrashcheniy permolibdatov strontsiya)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 9, pp 1942 - 1950 (USSR)

ABSTRACT: The authors investigated the decomposition of strontium permolybdates in aqueous solution and in the presence of various amounts of hydrogen peroxide. The decomposition was measured for 0,008 m. solutions of wine-red ($SrMoO_8$) red ($SrMoO_7$), and yellow ($SrMoO_6$) permolybdate at 15°, 25°, and 35° (Figs 1-3; curves 1,2, and 3); under the same conditions but in the presence of Na_2MoO_4 and $SrCl_2$ decomposition curves were obtained in good agreement with the first ones (Figs 1-3, curves 4,5, and 6); the sharp deviations in the curve for the yellow permolybdate ($SrMoO_6$)

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in figure 6 indicate that an intermediate compound, in all probability $SrMoO_5$, is being formed. The activation energies for the decomposition of the wine-red and the yellow permolybdates is given in figure 7. The conductivity of the aqueous solutions was also determined during the course of the decompositions (Fig 8). The formation of water and the decomposition were investigated using a vacuum desiccator (Table). Besides the compounds already mentioned, also calcium permolybdate $(CaMoO_6)_2$ $0,9\ H_2O$ was investigated. It was found that in the decomposition intermediate compounds, $SrMoO_6$ and $SrMoO_5$, arise, the existence of which are hereby confirmed. The endproduct is always $SrMoO_4$. The yellow permolybdates $SrMoO_6$, $CaMoO_6$, and $SrMoO_5$ are true peroxides, while the highly red-colored permolybdates are considered to be peroxyhydrates of the yellow ones. There are 8 figures, 1 table, and 8 references, 8 of which are Soviet.

Further Material on the Theory of the Joint Effect of Catalysts in Solution. IV. The Kinetics of Conversion of strontium Permolybdates

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ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Institute of Power Engineering)

SUBMITTED: January 12, 1957

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5(4)

AUTHORS: Shcherbinin, V. A., Bogdanov, G. A. SOV/76-32-10-6/39

TITLE: Further Material on the Theory of the Joint Action of Catalysts in Solution (Dopolnitel'nyye materialy k teorii sovmestnogo deystviya katalizatorov v rastvore) V. Catalysis of the Conversion of Hydrogen Peroxide by a Joint Action of Sodium Molybdate and Cobalt Chloride (V. Kataliz prevrashcheniya perekisi vodoroda sovmestnym deystviyem molibdata natriya i khlorida kobal'ta)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 10, pp 2256-2265 (USSR)

ABSTRACT: The catalytic properties of cobalt in solutions, a continuation of the hitherto carried out investigations of the homogeneous catalysis in solution, as well as the determination of peroxide compounds that might be present contain cobalt were the objects of the present investigations. A graph of the decomposition rate of the peroxide caused by cobalt chloride in the presence of caustic soda shows that cobalt chloride has in this case a high catalytic activity, with the increase in the concentration of the lye (with a simultaneous concentration of the cobalt

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salt) leading to a marked increase of the reaction velocity and a change of the reaction order. A joint action of sodium molybdate and cobalt chloride showed that the latter considerably increases the catalytic activity of the former, with a maximum obtained at a ratio of $C_{Co} : C_{Mo} = 1 : 4$ and $1 : 2$. A maximum in the concentration ratio of the catalysts points to the fact that in the catalysis intermediate products are formed. The catalysis is homogeneous only to a certain extent. The formation of a deposit observed in an experimental series is explained by the hydrolysis of the cobalt chloride and a subsequent oxidation. The experiments on the influence of the pH on the velocity of the catalysis showed that the hydroxyl ions are completely used up whereas the H ions are regenerated. The latter react with the catalytically active intermediate products and decrease their activity, and thus transform the normal catalyst into a less active acid salt. In the joint action of cobalt chloride and sodium molybdate the process takes place at lower activation energies due to the formation of the catalytically active intermediate products. The activation energies are lowest in acid

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medium, and highest in alkaline medium. An excess substrate hampers the catalytic process, which fact may be explained by an action of the peroxide on the catalytic activity of the intermediate compounds. There are 4 figures, 4 tables, and 2 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Institute of Power Engineering)

SUBMITTED: April 17, 1957

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5(4)

AUTHORS: Shcherbinin, V. A., Bogdanov, G. A. SOV/76-32-11-7/32

TITLE: Joint Action of Catalysts in Solution (Sovmestnoye deystviye katalizatorov v rastvore) VI. Investigation of the Electric Conductivity of Solutions During the Catalytic Decomposition Process of Hydrogen Peroxide Under the Influence of Sodium Molybdate and Cobalt Chloride (VI. Issledovaniye elektroprovodnosti rastvorov v protsesse kataliticheskogo razlozheniya perekisi vodoroda pod vliyaniyem molibdata natriya i khlorida kobal'ta)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 11, pp 2507-2513 (USSR)

ABSTRACT: The investigations mentioned in the title were carried out at the same time with a study of the kinetics of the catalysis in neutral and acid solutions. The experiments were carried out at 25° and with $c_{Co} = c_{Mo} = 0.002$ gram ion, $c_{H_2O_2} = 0.18$ mole. The addition of H_2O_2 to neutral sodium molybdate and cobalt chloride solutions leads to a relatively rapid formation

of peroxide compounds that are apparently carriers as the electric conductivity of the solution considerably decreases. During the process of catalysis the electric conductivity remains constant all the time, then it abruptly increases (complete decomposition of H_2O_2) but does not reach the initial value. The increase of the electric conductivity at the end of the reaction reaches a higher value in acid solutions than in alkaline solutions. Two factors exert an influence on this stage: a) The regeneration of the H^+ ions (by the decomposition of the peroxy complex compounds formed as intermediate products), b) The acid considerably hinders the formation of cobalt oxides. At pH $\gtrsim$ 7 the electric conductivity depends only to a small extent on the OH^- ion concentration ($\partial k/\partial c_{OH} = 0$). It is assumed that first sodium permolybdates are formed from the sodium molybdate and hydrogen peroxide. These permolybdates then react in an exchange reaction with cobalt chloride and are transformed into cobalt molybdate. The concept of the role played by the OH^- and H^+ ions in the

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catalysis as given on the basis of the data from the reaction kinetics (Ref 1) is proved: The OH^- ions irreversibly and the H^+ ions reversibly take part in the formation of the intermediate products of the catalysis. An abnormally big increase of the electric conductivity of solutions with a concentration of $c_{H_2SO_4} > 0.001$ M was observed on the addition of hydrogen peroxide. There are 4 figures and 3 Soviet references.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Institute of Power Engineering)

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5(4)
AUTHORS: Shcherbinin, V. A., Bogdanov, G. A. SOV/76-32-12-16/32

TITLE: The Joint Action of Catalysts in Solution (Sovmestnoye deystviye katalizatorov v rastvore) VII. Cobalt Peroxides as Intermediate Products in the Catalytic Dissociation of Hydrogen Peroxide by Sodium Molybdate and Cobalt Chloride (VII. Perekisnyye soyedineniya kobal'ta - promezhutochnyye produkty kataliza razlozheniya perekisi vodoroda deystviyem molibdata natriya i khlorida kobal'ta)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2761 - 2766 (USSR)

ABSTRACT: Black cobalt permolybdate was produced the effect of which on hydrogen peroxide is analogous, according to the kinetic curve, to that of sodium molybdate and cobalt chloride. Because of the instability of the permolybdate it could only be produced at temperatures between -40° and -45° C. The permolybdate is a colloid, showing the Tyndall-effect and coagulating if bases or potassium chloride are added. According to the varying cobalt content of the compound these are closely related compounds which pass over into one another

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through intermediate products. The production of cobalt peroxide was also carried out at low temperatures (-25° to -35° C), resulting in a green CoO_2 compound with bivalent cobalt being isomeric with the black cobalt dioxide CoO_2 (with tetravalent cobalt). The researchers of N. N. Semenov's school: V. V. Voyevodskiy, N. M. Emanuel', and N. I. Kobozev advocated the theory that the intermediate products result in chain reactions. There are 3 tables and 3 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power-Engineering Institute)

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5(2) SOV/78-4-2-4/40

AUTHORS: Shcherbinin, V. A., Bogdanov, G. A.

TITLE: The Permolybdates of Strontium, Calcium, and Cobalt (Permolibdaty strontsiya, kal'tsiya i kobal'ta)

PERIODICAL: Zhurnal neorganicheskoy khimii, 1959, Vol 4, Nr 2, pp 260-271 (USSR)

ABSTRACT: New permolybdates of strontium, calcium, and cobalt were produced and their composition, solubility, transformation mechanism in water, and the electric conductivity of their aqueous solutions were investigated. Four permolybdates of strontium were produced: $SrMoO_8 \cdot 4H_2O$ (bordeaux-red), $SrMoO_7 \cdot 4H_2O$ (red), $SrMoO_6 \cdot 3H_2O$ (yellow), and $SrMoO_5 \cdot nH_2O$ (cream-colored). The syntheses of these compounds are described in detail. The examination of the properties showed that only $SrMoO_6$ and $SrMoO_5$ are real peroxides, whereas the compounds $SrMoO_8 \cdot 4H_2O$ and $SrMoO_7 \cdot 4H_2O$ are perhydrates of these real peroxides. The perhydrate forms are as follows: $SrMoO_6 \cdot 2H_2O \cdot 2H_2O_2$ and $SrMoO_6 \cdot H_2O_2 \cdot 3H_2O$. The transformation

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velocity of the permolybdates in water and the electric conductivity of the respective solutions were investigated. The electric conductivity of yellow permolybdate shows a sudden increase at the beginning of the process, reaches a maximum, and finally decreases. The electric conductivity of red and bordeaux-red permolybdate is constant at the beginning, increases some time later, reaches a maximum and then decreases. The dehydration of strontium permolybdates by phosphorous pentoxide at 19° and 20° was investigated; the results are shown in the figures 2, 3, and 4. The calcium permolybdates $(CaMoO_6)_2O.9H_2O$ and $CaMoO_8.nH_2O$ were also produced. The compound $(CaMoO_6)_2O.9H_2O$ is insoluble in organic solvents but easily soluble in water. The red permolybdate $CaMoO_8.nH_2O$ is a finely crystalline powder, soluble in water and several organic solvents. At room temperature the compound turnsinto yellow permolybdate $(CaMoO_6)_2O.9H_2O$ while oxygen becomes free. Red calcium permolybdate was used for the production of yellow permolybdate. $CaMoO_6$ is the real

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peroxide, the crystalline product $(CaMoO_6)_2O.9H_2O$ is the perhydrate of this compound. The correct formula is $(CaMoO_6.4H_2O)_2.H_2O_2$. The cobalt permolybdates $Co_2(MoO_6)_3$ and $Co_2(MoO_5)_2$, and cobalt peroxide were produced and their properties described. In cobalt permolybdates cobalt is tri and tetravalent. This valency change of cobalt increases the difficulty of colorimetric determinations. The permolybdates of cobalt are unstable at room temperature, practically insoluble in acetone, ether, and carbon tetrachloride, easily soluble and decomposable in water, while oxygen is separated. The solutions are colloidal and, on the effect of potassium chloride, alkali or direct current, coagulable. Cobalt peroxide CoO_2 is a green powder which, on heating, turns black while oxygen is separated. There are 5 figures, 4 tables, and 14 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy energeticheskiy institut (Moscow Power Engineering Institute)

SUBMITTED: November 22, 1957

SHCHERBININ, V. A., Cand Chem Sci -- (diss) "Synthesis and study of the intermediate peroxide compounds formed in the process of the decomposition of hydrogen peroxide by sodium molybdate together with the salts of calcium, strontium, and cobalt." Moscow, 1960. 12 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Moscow Inst of Fine Chemical Technology im M. V. Lomonosov); 150 copies; price not given; (KL, 30-60, 137)

ZAGUDAYEV, D.S.; SHCHERBININ, V.A. (Moskva)

Polymethyl methacrylate. Khim. v shkole 15 no.5:69-71 S-O '60. (MIRA 13:10)

(Methacrylic acid)

DAKHNOV, V.N., doktor geol.-miner. nauk; KHOLIN, A.I., kand. geol.-miner.nauk; PESTRIKOV, A.S.; GALUZO, Yu.V.; AFRIKYAN, AN.; YUDKEVICH, R.V.; POPOV, V.K.; POZIN, L.Z.; LARIONOV, V.V.; VENDEL'SHTEYN, B.Yu.; GORBUNOVA, V.I.; DZYURAK, M.D.; YEVDOKIMOVA, V.A.; ZHOKHOVA, R.G.; LATYSHEVA, M.G.; MAREN'KO, N.N.; MANCHEVA, N.V.; MOROZOVICH, Ya.R.; OREKHOVSKAYA, Ye.P.; POKLONOV, M.S.; ROMANOVA, T.F.; SEVOST'YANOV, M.M.; TANASEVICH, N.I.; FARMANOVA, N.V.; FEDOROVICH, G.P.; SHCHERBININ, V.A.; ELLANSKIY, M.M.; YANUSH, Ye.F.; YUNGANS, S.M., ved. red.; YAKOVLEVA, Z.I., tekhn. red.

[Using methods of field geophysics in studying gas-bearing reservoirs]Primenenie metodov promyslovoi geofiziki pri izuchenii gazonosnykh kollektorov. Moskva, Gostoptekhizdat, 1962. 279 p. (MIRA 16:2)

(Gas, Natural--Geology)
(Prospecting--Geophysical methods)

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AUTHOR: Shcherbinin, V. A.

TITLE: Mechanism of catalytic decomposition of hydrogen peroxide in solution by sodium molybdate in combination with other salts. 2. Sodium molybdate plus calcium or strontium chloride

SOURCE: Zhurnal fiz. khimii, v. 37, no. 8, 1963, 1832-1840

TOPIC TAGS: hydrogen peroxide, hydrogen peroxide decomposition, sodium molybdate, calcium chloride, strontium chloride.

ABSTRACT: This article gives additional information on the catalytic effect of the peroxymolybdates of calcium and strontium upon the decomposition reaction of hydrogen peroxide in solution in order to explain the molecular mechanism of the process. It was proven experimentally that the studied peroxymolybdates are identical with the compounds that are formed in the reaction mixtures and function as intermediates for the catalytic decomposition of H_2O_2 with sodium molybdate and calcium and strontium salts. The red colored peroxymolybdates of the composition $MeMoO_6 \cdot 2H_2O_2$ are the main intermediates. They decompose with the formation of reaction products and are instrumental in the regeneration of the

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